

What is claimed is:

1. A printer, comprising:

a printer position information acquisition which acquires printer position information to specify a place where the printer is installed;

a printer position information transmitter which transmits the printer position information acquired by said printer position information acquisition to another printer and causes said another printer to calculate a relative distance between the printer and said another printer;

a relative distance receiver which receives the relative distance from said another printer; and

a relative distance storage which stores the relative distance received by said relative distance receiver.

2. The printer according to claim 1, further comprising:

a print transmitting data receiver which receives print transmitting data transmitted by a print client; and

an alternative print requester which selects another printer with the shortest relative distance as an alternative printer and requests alternative printing of the print transmitting data, when the printer is not in a state capable of executing a print operation based on the print transmitting data.

3. The printer according to claim 2, further comprising a relative distance judgment section which judges whether the relative distance between the alternative printer and the printer is within a predetermined range.

4. The printer according to claim 3, wherein said alternative print requester comprises a transferor which transfers the received print transmitting data to the alternative printer when said relative distance judgment section judges that the relative distance between the alternative printer and the printer is within the predetermined range.

5. The printer according to claim 4, wherein said alternative print requester further comprises an alternative transmitter which generates alternative print transmitting data fitting the alternative printer based on the received print transmitting data and transmits the alternative print transmitting data to the alternative printer when said relative distance judgment section judges that the relative distance between the alternative printer and the printer is not within the predetermined range.

6. The printer according to claim 5, wherein said alternative transmitter acquires print data by decrypting the received print transmitting data and generates the alternative print transmitting data by encrypting the acquired print data again so that the print data is decrypted by the alternative printer.

7. The printer according to claim 6, further comprising a selection print executor which tries to execute the print operation based on the print transmitting data when the print transmitting data is decrypted with any private key generated using a passphrase containing at least the printer position information acquired by said printer position information acquisition or its surrounding position information and which does not execute the print operation based on the print transmitting data when the print transmitting data is not decrypted.

8. The printer according to claim 7, wherein, if the printer is not in the state capable of executing the print operation based on the print transmitting data when the selection print executor tries to execute the print operation based on the print transmitting data, said alternative transmitter encrypts print data acquired by decrypting the print transmitting data with a public key of the alternative printer to generate the alternative print transmitting data.

9. The printer according to claim 5, further comprising a selection print executor which judges whether a difference between

printer position information contained in the print transmitting data and the printer position information acquired by said printer position information acquisition is within a predetermined range, tries to execute the print operation based on the print transmitting data when the difference between these two pieces of information is within the predetermined range, and does not execute the print operation based on the print transmitting data when the difference between these two pieces of information is not within the predetermined range.

10. The printer according to claim 9, wherein, if the printer is not in the state capable of executing the print operation based on the print transmitting data when said selection print executor tries to execute the print operation based on the print transmitting data, said alternative transmitter acquires print data from the received print transmitting data and generates the alternative print transmitting data by joining printer position information on the alternative printer to the acquired print data.

11. The printer according to claim 1, further comprising:
a print transmitting data receiver which receives print transmitting data transmitted by a print client; and
a list transmitter which transmits an alternative printer list in which the relative distance of said another printer is listed on a printer-by-printer basis to a print client which has transmitted the print transmitting data, when the printer is not in a state capable of executing a print operation based on the print transmitting data.

12. The printer according to claim 11, further comprising a sorter which sorts the alternative printer list in order of the relative distance from shortest to longest.

13. The printer according to claim 12, wherein the alternative printer list contains a network address of said another printer as information to specify said another printer.

14. A printer, comprising:

a printer position information acquisition which acquires printer position information to specify a place where the printer is installed;

a printer position information receiver which receives printer position information on another printer from said another printer;

a relative distance calculator which calculates a relative distance between the printer and said another printer based on the printer position information acquired by the printer position information acquisition and the printer position information received by the printer position information receiver; and

a relative distance storage which stores the relative distance calculated by said relative distance calculator.

15. The printer according to claim 14, further comprising:

a print transmitting data receiver which receives print transmitting data transmitted by a print client; and

an alternative print requester which selects another printer with the shortest relative distance as an alternative printer and requests alternative printing of the print transmitting data, when the printer is not in a state capable of executing a print operation based on the print transmitting data.

16. The printer according to claim 15, further comprising a relative distance judgment section which judges whether the relative distance between the alternative printer and the printer is within a predetermined range.

17. The printer according to claim 16, wherein said alternative print requester comprises a transferor which transfers the received print transmitting data to the alternative printer when said relative distance judgment section judges that the relative distance between the alternative printer and the printer is within the predetermined range.

18. The printer according to claim 17, wherein said alternative print requester further comprises an alternative transmitter which generates alternative print transmitting data fitting the alternative printer based on the received print transmitting data and transmits the alternative print transmitting data to the alternative printer when said relative distance judgment section judges that the relative distance between the alternative printer and the printer is not within the predetermined range.

19. The printer according to claim 18, wherein said alternative transmitter acquires print data by decrypting the received print transmitting data and generates the alternative print transmitting data by encrypting the acquired print data again so that the print data is decrypted by the alternative printer.

20. The printer according to claim 19, further comprising a selection print executor which tries to execute the print operation based on the print transmitting data when the print transmitting data is decrypted with any private key generated using a passphrase containing at least the printer position information acquired by said printer position information acquisition or its surrounding position information and which does not execute the print operation based on the print transmitting data when the print transmitting data is not decrypted.

21. The printer according to claim 20, wherein, if the printer is not in the state capable of executing the print operation based on the print transmitting data when the selection print executor tries to execute the print operation based on the print transmitting data, said alternative transmitter encrypts print data acquired by decrypting the print transmitting data with a public key of the alternative printer to generate the alternative print transmitting data.

22. The printer according to claim 18, further comprising a selection print executor which judges whether a difference between printer position information contained in the print transmitting

data and the printer position information acquired by said printer position information acquisition is within a predetermined range, tries to execute the print operation based on the print transmitting data when the difference between these two pieces of information is within the predetermined range, and does not execute the print operation based on the print transmitting data when the difference between these two pieces of information is not within the predetermined range.

23. The printer according to claim 22, wherein, if the printer is not in the state capable of executing the print operation based on the print transmitting data when said selection print executor tries to execute the print operation based on the print transmitting data, said alternative transmitter acquires print data from the received print transmitting data and generates the alternative print transmitting data by joining printer position information on the alternative printer to the acquired print data.

24. The printer according to claim 14, further comprising:
a print transmitting data receiver which receives print transmitting data transmitted by a print client; and
a list transmitter which transmits an alternative printer list in which the relative distance of said another printer is listed on a printer-by-printer basis to a print client which has transmitted the print transmitting data, when the printer is not in a state capable of executing a print operation based on the print transmitting data.

25. The printer according to claim 24, further comprising a sorter which sorts the alternative printer list in order of the relative distance from shortest to longest.

26. The printer according to claim 25, wherein the alternative printer list contains a network address of said another printer as information to specify said another printer.

27. A method of controlling a printer, comprising the steps

of:

acquiring printer position information to specify a place where the printer is installed;

transmitting the printer position information to another printer and causing said another printer to calculate a relative distance between the printer and said another printer;

receiving the relative distance from said another printer;

and

storing the relative distance received in a relative distance storage.

28. A method of controlling a printer, comprising the steps of:

acquiring first printer position information which is printer position information to specify a place where the printer is installed;

receiving second printer position information which is printer position information on another printer from said another printer;

calculating a relative distance between the printer and said another printer based on the first printer position information and the second printer position information; and

storing the calculated relative distance in the relative distance storage.

29. A print client, comprising:

a print transmitting data generator which generates print transmitting data based on print data;

a first transmitter which transmits the print transmitting data to a printer;

an alternative print notice receiver which receives an alternative print notice from the printer when the printer is not in a state capable of executing a print operation, the alternative print notice containing at least an alternative printer list in which alternative printer candidates are listed, and the alternative printer list containing at least relative distances between the printer and the alternative printer

candidates;

an alternative printer selector which selects an alternative printer at least based on the alternative printer list; and

a second transmitter which transmits the print transmitting data to the selected alternative printer.

30. The print client according to claim 29, further comprising a public key table in which public keys corresponding to respective printers are tabulated, wherein

said print transmitting data generator generates the print transmitting data by encrypting the print data with a public key corresponding to a printer to which the print data is transmitted.

31. The print client according to claim 30, wherein said alternative printer selector selects a printer with the shortest relative distance out of the printers whose public keys are held in the public key table as the alternative printer based on the alternative printer list and the public key table.

32. The print client according to claim 31, wherein said second transmitter regenerates print transmitting data by encrypting the print data again with a public key of the printer selected as the alternative printer and transmits the regenerated print transmitting data to the alternative printer.

33. The print client according to claim 29, further comprising a printer position information table in which printer position information to specify places where respective printers are installed is tabulated corresponding to the respective printers, wherein

said print transmitting data generator generates the print transmitting data by joining printer position information on a printer, to which the print data is transmitted, to the print data.

34. The print client according to claim 33, wherein said

alternative printer selector selects a printer with the shortest relative distance out of the printers on which the printer position information is held in the printer position information table as the alternative printer based on the alternative printer list and the printer position information table.

35. The print client according to claim 34, wherein said second transmitter regenerates print transmitting data by joining printer position information on the printer selected as the alternative printer to the print data and transmits the regenerated print transmitting data to the alternative printer.

36. A method of controlling a print client, comprising the steps of:

- generating print transmitting data based on print data;
- transmitting the print transmitting data to a printer;
- receiving an alternative print notice from the printer when the printer is not in a state capable of executing a print operation, the alternative print notice containing at least an alternative printer list in which alternative printer candidates are listed, and the alternative printer list containing at least relative distances between the printer and the alternative printer candidates;

- selecting an alternative printer at least based on the alternative printer list; and

- transmitting the print transmitting data to the selected alternative printer.

37. A print system, comprising:

- a first printer position information acquisition which acquires first printer position information to specify a place where a first printer is installed;

- a second printer position information acquisition which acquires second printer position information to specify a place where a second printer is installed;

- a relative distance calculator which calculates a relative distance between the first printer and the second printer based

on the first printer position information and the second printer position information; and

a relative distance storage which stores the calculated relative distance in the first printer.

38. The print system according to claim 37, wherein the first printer comprises;

a print transmitting data receiver which receives print transmitting data transmitted by a print client; and

an alternative print requester which selects the second printer with the shortest relative distance as an alternative printer and requests alternative printing of the print transmitting data when the first printer is not in a state capable of executing a print operation based on the print transmitting data.

39. The print system according to claim 38, wherein the first printer further comprises a relative distance judgment section which judges whether the relative distance between the alternative printer and the first printer is within a predetermined range.

40. The print system according to claim 39, wherein said alternative printer requester comprises a transferor which transfers the received print transmitting data to the alternative printer when the relative distance judgment section judges that the relative distance between the alternative printer and the first printer is within the predetermined range.

41. The print system according to claim 40, wherein said alternative print requester further comprises an alternative transmitter which generates alternative print transmitting data fitting the alternative printer based on the received print transmitting data and transmits the alternative print transmitting data to the alternative printer, when the relative distance judgment section judges that the relative distance between the alternative printer and the first printer is not within the predetermined range.

42. The print system according to claim 41, wherein said alternative transmitter acquires print data by decrypting the received print transmitting data and generates the alternative print transmitting data by encrypting the acquired print data again so that the print data is decrypted by the alternative printer.

43. The print system according to claim 42, wherein
the first printer further comprises a first selection print executor which tries to execute the print operation based on the print transmitting data when the print transmitting data is decrypted with any private key generated using a passphrase containing at least the printer position information acquired by the first printer position information acquisition or its surrounding position information and does not execute the print operation based on the print transmitting data when the print transmitting data is not decrypted, and

the alternative printer comprises a second selection print executor which tries to execute a print operation based on the print transmitting data received from the first printer or the alternative print transmitting data when the print transmitting data or the alternative transmitting data is decrypted with any private key generated using a passphrase containing at least the printer position information acquired by the second printer position information acquisition or its surrounding position information and does not execute the print operation based on the print transmitting data or the alternative print transmitting data when the print transmitting data or the alternative print transmitting data is not decrypted.

44. The print system according to claim 43, wherein, if the first printer is not in the state capable of executing the print operation based on the print transmitting data when the selection print executor tries to execute the print operation based on the print transmitting data, the alternative transmitter encrypts print data acquired by decrypting the print transmitting data with a public key of the alternative printer to generate the

alternative print transmitting data.

45. The print system according to claim 41, wherein

the first printer further comprises a first selection print executor which judges whether a difference between printer position information contained in the print transmitting data and the printer position information acquired by the first printer position information acquisition is within a predetermined range, tries to execute the print operation based on the print transmitting data when the difference between these two pieces of information is within the predetermined range, and does not execute the print operation based on the print transmitting data when the difference between these two pieces of information is not within the predetermined range, and

the alternative printer further comprises a second selection print executor which judges whether a difference between printer position information contained in the print transmitting data or the alternative print transmitting data and the printer position information acquired by the second printer position information acquisition is within a predetermined range, tries to execute a print operation based on the print transmitting data or the alternative print transmitting data when the difference between these two pieces of information is within the predetermined range, and does not execute the print operation based on the print transmitting data or the alternative print transmitting data when the difference between these two pieces of information is not within the predetermined range.

46. The print system according to claim 45, wherein, if the first printer is not in the state capable of executing the print operation based on the print transmitting data when the selection print executor tries to execute the print operation based on the print transmitting data, said alternative transmitter acquires print data from the received print transmitting data and generates the alternative print transmitting data by joining printer position information on the alternative printer to the acquired print data.

47. The print system according to claim 37, wherein the first printer further comprises:

a print transmitting data receiver which receives print transmitting data transmitted by a print client; and

a list transmitter which transmits an alternative printer list in which the relative distance of the second printer is listed on a printer-by-printer basis to the print client which has transmitted the print transmitting data, when the first printer is not in a state capable of executing a print operation based on the print transmitting data.

48. The print system according to claim 42, wherein the first printer further comprises a sorter which sorts the alternative printer list in order of the relative distance from shortest to longest.

49. The print system according to claim 48, wherein the alternative printer list contains a network address of the second printer as information to specify the second printer.

50. The print system according to any one of claim 49, wherein the print client comprises:

an alternative printer selector which selects an alternative printer at least based on the alternative printer list; and

a retransmitter which transmits the print transmitting data to the selected alternative printer.

51. The print system according to claim 50, wherein the print client further comprises:

a public key table in which public keys corresponding to respective printers are tabulated, and

a print transmitting data transmitter which generates the print transmitting data by encrypting print data with a public key corresponding to a printer to which print data is transmitted and transmits the print transmitting data to the first printer.

52. The print system according to claim 51, wherein the alternative printer selector selects a printer with the shortest relative distance out of the printers whose public keys are held in the public key table as the alternative printer based on the alternative printer list and the public key table.

53. The print system according to claim 52, wherein the retransmitter regenerates print transmitting data by encrypting the print data again with a public key of the printer selected as the alternative printer and transmits the regenerated print transmitting data to the alternative printer.

54. The print system according to claim 50, wherein the print client further comprises:

a printer position information table in which printer position information to specify places where respective printers are installed is tabulated corresponding to the respective printers, and

a print transmitting data transmitter which generates the print transmitting data by joining printer position information on a printer to which print data is transmitted to the print data.

55. The print system according to claim 54, wherein the alternative printer selector selects a printer with the shortest relative distance out of the printers on which the printer position information is held in the printer position information table as the alternative printer based on the alternative printer list and the printer position information table.

56. The print system according to claim 55, wherein the retransmitter regenerates print transmitting data by joining printer position information on the printer selected as the alternative printer to the print data and transmits the regenerated print transmitting data to the alternative printer.

57. A method of controlling a print system, comprising the steps

of:

acquiring first printer position information to specify a place where a first printer is installed;

acquiring second printer position information to specify a place where a second printer is installed;

calculating a relative distance between the first printer and the second printer based on the first printer position information and the second printer position information; and

storing the calculated relative distance in a relative distance storage of the first printer.